

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Please cancel claims 1 - 90.

91. (new) A DNA vaccine for treating a T cell-mediated inflammatory autoimmune disease comprising a recombinant construct comprising a nucleic acid sequence encoding a fragment of heat shock protein 60 (HSP60) characterized in that it reacts with T cells isolated from an animal vaccinated with HSP70 to induce Th2/3 T-cell responses.
92. (new) The DNA vaccine of claim 91, wherein the fragment is derived from human HSP60.
93. (new) The DNA vaccine of claim 92, wherein the fragment comprises amino acid sequence selected from: amino acids 271-290 of human HSP60 (SEQ ID NO:1), amino acids 346-365 of human HSP60 (SEQ ID NO:2), amino acids 361-380 of human HSP60 (SEQ ID NO:3), amino acids 391-410 of human HSP60 (SEQ ID NO:4), amino acids 406-425 of human HSP60 (SEQ ID NO:5), amino acids 436-455 of human HSP60 (SEQ ID NO:6), amino acids 466-485 of human HSP60 (SEQ ID

NO:7), amino acids 481-500 of human HSP60 (SEQ ID NO:8) and amino acids human 496-515 of HSP60 (SEQ ID NO:9).

94. (new) The DNA vaccine of claim 91, wherein the nucleic acid sequence is operatively linked to one or more transcription control sequences in a suitable expression system enabling *in vivo* expression of the encoded fragment in a human host.
95. (new) The DNA vaccine of claim 94, wherein the transcription control sequences are selected from the group consisting of: RSV control sequences, CMV control sequences, retroviral LTR sequences, SV-40 control sequences and β -actin control sequences.
96. (new) The DNA vaccine of claim 91, wherein the recombinant construct is incorporated into an eukaryotic expression vector.
97. (new) A recombinant construct comprising a nucleic acid sequence encoding a fragment of HSP60 characterized in that it reacts with T cells isolated from an animal vaccinated with HSP70 to induce Th2/3 T-cell responses, the nucleic acid sequence being operatively linked to one or more transcription control sequences.
98. (new) The construct of claim 97, wherein the fragment comprises amino acid sequence selected from: amino acids 271-290 of human HSP60 (SEQ ID NO:1), amino

acids 346-365 of human HSP60 (SEQ ID NO:2), amino acids 361-380 of human HSP60 (SEQ ID NO:3), amino acids 391-410 of human HSP60 (SEQ ID NO:4), amino acids 406-425 of human HSP60 (SEQ ID NO:5), amino acids 436-455 of human HSP60 (SEQ ID NO:6), amino acids 466-485 of human HSP60 (SEQ ID NO:7), amino acids 481-500 of human HSP60 (SEQ ID NO:8) and amino acids 496-515 of human HSP60 (SEQ ID NO:9).

99. (new) The construct of claim 97, wherein the recombinant construct is incorporated into a eukaryotic expression vector.

100. (new) The construct of claim 101, wherein the eukaryotic expression vector is selected from the group consisting of: pcDNA3, pcDNA3.1(+/-), pZeoSV2(+/-), pSecTag2, pDisplay, pEF/myc/cyto, pCMV/myc/cyto, pCR3.1, pCI, pBK-RSV, pBK-CMV and pTRES.

101. (new) A pharmaceutical composition comprising (a) a recombinant construct according to claim 97; and (b) a pharmaceutically acceptable carrier.

102. (new) The composition of claim 101, wherein the carrier comprises a delivery vehicle that delivers the nucleic acid sequences to a subject, wherein said delivery vehicle is selected from the group consisting of liposomes, micelles, emulsions and cells.

103. (new) The composition of claim 101, wherein the nucleic acid sequence is operatively linked to one or more transcription control sequences.
104. (new) The composition of claim 101, wherein the recombinant construct is incorporated into a eukaryotic expression vector.
105. (new) The composition of claim 101, wherein the fragment comprises amino acid sequence selected from: amino acids 271-290 of human HSP60 (SEQ ID NO:1), amino acids 346-365 of human HSP60 (SEQ ID NO:2), amino acids 361-380 of human HSP60 (SEQ ID NO:3), amino acids 391-410 of human HSP60 (SEQ ID NO:4), amino acids 406-425 of human HSP60 (SEQ ID NO:5), amino acids 436-455 of human HSP60 (SEQ ID NO:6), amino acids 466-485 of human HSP60 (SEQ ID NO:7), amino acids 481-500 of human HSP60 (SEQ ID NO:8) and amino acids 496-515 of human HSP60 (SEQ ID NO:9).
106. (new) A pharmaceutical composition comprising (a) a peptide fragment of HSP60 characterized in that it reacts with T cells isolated from an animal vaccinated with HSP70 to induce Th2/3 T-cell responses; and (b) a pharmaceutically acceptable carrier.
107. (new) The composition of claim 106, wherein the fragment is derived from human HSP60.

108. (new) The composition of claim 106, wherein the fragment comprises amino acid sequence selected from: amino acids 361-380 of human HSP60 (SEQ ID NO:3), amino acids 391-410 of human HSP60 (SEQ ID NO:4), amino acids 406-425 of human HSP60 (SEQ ID NO:5), and amino acids 496-515 of human HSP60 (SEQ ID NO:9).
109. (new) A method of treating or preventing the symptoms of a T cell-mediated inflammatory autoimmune disease, comprising administering to a subject in need thereof a therapeutically effective amount of a pharmaceutical composition comprising a recombinant construct according to claim 97.
110. (new) The method of claim 109, wherein the nucleic acid sequence is operatively linked to one or more transcription control sequences.
111. (new) The method of claim 109, wherein the fragment comprises amino acid sequence selected from: amino acids 271-290 of human HSP60 (SEQ ID NO:1), amino acids 346-365 of human HSP60 (SEQ ID NO:2), amino acids 361-380 of human HSP60 (SEQ ID NO:3), amino acids 391-410 of human HSP60 (SEQ ID NO:4), amino acids 406-425 of human HSP60 (SEQ ID NO:5), amino acids 436-455 of human HSP60 (SEQ ID NO:6), amino acids 466-485 of human HSP60 (SEQ ID NO:7), amino

acids 481-500 of human HSP60 (SEQ ID NO:8) and amino acids 496-515 of human HSP60 (SEQ ID NO:9).

112. (new) The method of claim 109, wherein the T cell-mediated inflammatory autoimmune disease is selected from the group consisting of: rheumatoid arthritis, collagen II arthritis, multiple sclerosis, autoimmune neuritis, systemic lupus erythematosus, psoriasis, juvenile onset diabetes, Sjogren's disease, thyroid disease, sarcoidosis, autoimmune uveitis, inflammatory bowel disease (Crohn's and ulcerative colitis) and autoimmune hepatitis.
113. (new) The method of claim 109 wherein the disease is arthritis.
114. (new) The method of claim 111 wherein the disease is arthritis.
115. (new) The method of claim 109, wherein the subject is selected from the group consisting of humans and non-human mammals.
116. (new) The method of claim 109, wherein the pharmaceutical composition is administered to said subject in a manner selected from the group consisting of:
 - a) administering said composition at the time of appearance of disease symptoms; and

b) administering said composition prior to the appearance of disease symptoms.

117. (new) The method of claim 109, wherein the pharmaceutical composition is administered in a manner selected from the group consisting of: intravenous injection, intramuscular injection, aerosal, oral, percutaneous or topical administration.
118. (new) A method for treating or preventing the symptoms of a T cell-mediated inflammatory autoimmune disease comprising the steps of (a) obtaining cells from a subject; (b) transfecting the cells *in vitro* with a recombinant construct according to claim 97; and (c) reintroducing the transfected cells to the subject, thereby treating the disease.
119. (new) The method of claim 118, wherein the fragment comprises amino acid sequence selected from: amino acids 271-290 of human HSP60 (SEQ ID NO:1), amino acids 346-365 of human HSP60 (SEQ ID NO:2), amino acids 361-380 of human HSP60 (SEQ ID NO:3), amino acids 391-410 of human HSP60 (SEQ ID NO:4), amino acids 406-425 of human HSP60 (SEQ ID NO:5), amino acids 436-455 of human HSP60 (SEQ ID NO:6), amino acids 466-485 of human HSP60 (SEQ ID NO:7), amino acids 481-500 of human HSP60 (SEQ ID NO:8) and amino acids 496-515 of human HSP60 (SEQ ID NO:9).

120. (new) A method for treating or preventing a T cell-mediated inflammatory autoimmune disease comprising the steps of (a) obtaining cells from a subject; (b) infecting the cells *in vitro* with a virus comprising a recombinant construct according to claim 97; and (c) reintroducing the infected cells to the subject, thereby treating the disease.
121. (new) The method of claim 120, wherein the fragment comprises amino acid sequence selected from: amino acids 271-290 of human HSP60 (SEQ ID NO:1), amino acids 346-365 of human HSP60 (SEQ ID NO:2), amino acids 361-380 of human HSP60 (SEQ ID NO:3), amino acids 391-410 of human HSP60 (SEQ ID NO:4), amino acids 406-425 of human HSP60 (SEQ ID NO:5), amino acids 436-455 of human HSP60 (SEQ ID NO:6), amino acids 466-485 of human HSP60 (SEQ ID NO:7), amino acids 481-500 of human HSP60 (SEQ ID NO:8) and amino acids 496-515 of human HSP60 (SEQ ID NO:9).
122. (new) A method of treating or preventing a T cell-mediated inflammatory autoimmune disease, comprising administering to a subject in need thereof a therapeutically effective amount of a pharmaceutical composition according to claim 16.
123. (new) The method of claim 122, wherein the fragment comprises amino acid sequence selected from: amino acids

271-290 of human HSP60 (SEQ ID NO:1), amino acids 346-365 of human HSP60 (SEQ ID NO:2), amino acids 361-380 of human HSP60 (SEQ ID NO:3), amino acids 391-410 of human HSP60 (SEQ ID NO:4), amino acids 406-425 of human HSP60 (SEQ ID NO:5), amino acids 436-455 of human HSP60 (SEQ ID NO:6), amino acids 466-485 of human HSP60 (SEQ ID NO:7), amino acids 481-500 of human HSP60 (SEQ ID NO:8) and amino acids 496-515 of human HSP60 (SEQ ID NO:9).

124. (new) The method of claim 122, wherein the T cell-mediated inflammatory autoimmune disease is selected from the group consisting of: rheumatoid arthritis, collagen II arthritis, multiple sclerosis, autoimmune neuritis, systemic lupus erythematosus, psoriasis, juvenile onset diabetes, Sjogren's disease, thyroid disease, sarcoidosis, autoimmune uveitis, inflammatory bowel disease (Crohn's and ulcerative colitis) and autoimmune hepatitis.

125. (new) The method of claim 122, wherein the pharmaceutical composition is administered to said subject in a manner selected from the group consisting of:

- a) administering said composition at the time of appearance of disease symptoms; and
- b) administering said composition prior to the appearance of disease symptoms.

126. (new) The method of claim 122, wherein the pharmaceutical composition is administered by intravenous injection, intramuscular injection, aerosol, oral, percutaneous or topical administration.
127. (new) The method of claim 122 wherein the disease is arthritis.
128. (new) A method of screening for active fragments of HSP60 capable of inducing Th2/3 T-cell responses comprising:
- (a) applying a DNA construct encoding HSP70 to an animal in a sufficient amount to induce HSP70 expression in the animal;
 - (b) obtaining T cells from said animal;
 - (c) contacting the cells with a candidate HSP60 fragment for sufficient time for inducing cytokine secretion in said cells; and
 - (d) determining the secretion of IL-10, TGF β 1 and IFN γ from said cells, wherein if the secretion of IL-10 and TGF β 1 is increased and the secretion of IFN γ is decreased then the candidate HSP60 fragment is capable of inducing Th2/3 T-cell responses.